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EXAMINER	
CHOU, ALBERT T	
ART UNIT	**PAPER NUMBER**
2616	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/717,546	SAINT ETIENNE ET AL.	
	Examiner	Art Unit	
	Albert T. Chou	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2007 for the amendment*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 6-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 6-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The following is a response to the amendment filed on September 5, 2007.

- Claims 1, 2 and 6-14 are pending in the application.
- Claims 1, 2 and 6-9 remain rejected under U.S.C. 103(a) as being unpatentable over US Patent No. No. 6,282,669 to Imanaka et al. (hereinafter "Imanaka") in view of US Patent No. 6,188,689 to Katsube et al. (hereinafter "Katsube") and further in view of US Patent No. 6,823,453 to Hagerman.
- .Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. No. 6,282,669 to Imanaka in view of US Patent No. 6,188,689 to Katsube and further in view of US Patent No. 6,823,453 to Hagerman.
- Claims 3-5 are canceled.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2 and 5-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. No. 6,282,669 to Imanaka et al. (hereinafter "Imanaka") in view of

US Patent No. 6,188,689 to Katsube et al. (hereinafter "Katsube") and further in view of US Patent No. 6,823,453 to Hagerman.

Regarding claim 1, Imanaka teaches a process for implementing a redundant switched full-duplex Ethernet type communication network **[Fig. 1]** including at least two independent elementary networks **[Fig. 1; System-A & System-B]**, each elementary network including at least one source subscriber equipment **[Fig. 1; Node 10]** and at least one destination subscriber equipment **[Fig. 1; Node 20]**, connected to each other through at least one physical link **[Fig. 1; a connection between Node 10 and System-A Communication Line 1]**, each equipment being connected to each of these elementary networks **[Fig. 1; Nodes 10 & 20 both connect to System-A & System-B]**, the process comprising:

performing a frame by frame redundancy on each elementary network **[Figs. 1 & 3; Data are concurrently transmitted from Node 10 to both System-A and System-B; col. 3, lines 30-45]**, wherein the performing the frame by frame redundancy includes:

transmitting frames on the elementary network **[Figs. 1-3]**, including the steps of:

adding a numbering field in each transmitted frame through the switch **[Fig. 2; Data Identifier 7; col. 3, lines 15-29]** to insert a frame number **[Fig. 2; a unique, consecutive sequence number; col. 3, lines 15-29]**; and sending each frame with the added numbering field on each of the elementary networks **[Figs. 1 & 3; Data are**

concurrently transmitted from Node 10 to both System-A and System-B; col. 3, lines 30-45]; and

receiving the transmitted frames on the elementary network **[Figs. 1-2 & 4-6]**, including the steps of:

storing the received frame number **[Fig. 4, steps 111-112; col. 3, lines 45-67]**, and

accepting the received frame if its frame number has not already been received **[Fig. 4; steps 113, 114 & 116; col. 4, lines 1-58]**.

Imanaka does not expressly teach the source and the destination subscriber equipment connected each other through at least one switch, or a predetermined time window for accepting the received frame.

Katsube teaches a network, in which the source **[Fig. 5(a); Sending Host 311]** and the destination subscriber equipment **[Fig. 5(a); Receiving Host 313 or 312]** are connected each other through at least one switch **[Fig. 5(a); e.g. Router 341]**.

Hagerman teaches accepting the received frame only within a predetermined time window if its frame number has not already been received during the predetermined time window **[Fig. 3, Time_Xmit 302, Fig. 4,step 408, Check Transmit Time in Window and Not Duplicate. Accept the frame if the transmit time is within a predetermined time window; col. 5, lines 33-43]**

It would have been obvious to a person of ordinary skill in the art at the time of the invention to include a router/switch in a redundant Ethernet communication network system using a data frame comprising a transmit time field as disclosed in Hagerman.

The motivation for combining the reference teachings would be two folds: by discarding the late arrival or duplicated frames at the reception to reduce the consumption of unnecessary processing time or resources, and enabling a subscriber equipment in a local redundant Ethernet communication network system to communicate a remote subscriber equipment residing in another redundant Ethernet communication network system in order to achieve network and/or transmission data redundancy.

Regarding claim 2, Imanaka teaches a process, wherein there are two elementary networks **[Fig. 1; System-A & System-B]**.

Regarding claims 6 and 7, Imanaka teaches each limitation set forth in its parent claim.

Imanaka does not expressly teaches a virtual link provides a link from a source equipment to the at least one destination equipment and a virtual link number is accepted in the numbering field.

Katsube teaches a virtual link provides a link from a source equipment to the at least one destination equipment **[col. 7, lines 18-26]** and a virtual link number is

accepted in the numbering field **[Figs. 4(a), 4(b) & 9; Dedicated Virtual Link Indicator DVLI is accepted Datalink header]**.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to apply the virtual link concept as taught by Katsube and implement to Imanaka's redundant Ethernet communication network system.

The motivation for combining the reference teachings would be to enable a subscriber equipment in a local redundant Ethernet communication network system to communicate a remote subscriber equipment residing in another redundant Ethernet communication network system using the virtual link concept so that each virtual link will not be disturbed by other links which share the same physical link along its route in the network.

Regarding claim 8, Imanaka teaches each limitation set forth in its parent claim.

Imanaka does not expressly teaches the virtual link has: a transfer direction, a fixed passband, a maximum guaranteed time for transfer of packets from the source equipment to the destination equipment, a fixed path on the network and a unique identifier.

Katsube teaches a process that a virtual link has:

a transfer direction **[Figs. 5(a), 11-13; e.g. Input DVLI=x1, Output DVLI=y1; col. 10, lines 53-67]**;

a fixed passband, a guaranteed maximum time for transfer of packets from a source equipment to a destination equipment **[Figs. 10 & 14b; Specify a bandwidth or**

QoS for each IP flow corresponding to each DVL by allocating an ATM-VC and reserving the bandwidth for the ATM-VC; col. 14, lines 3-8], regardless of the behavior of the rest of the network, each virtual link having its own transfer time **[Figs. 11 & 15; each virtual link has its own QoS or priority]**;

a fixed path on the network **[Figs. 5(a), 11-13; e.g. a fixed path from Sending Host 311 to Receiving Host 312 via DVLI=x1, DVLI=y1, DVLI=z1 & DVLI=w1]**; and

a unique identifier **[Figs. 5(a), 11-13; e.g. Input DVLI=x1, Output DVLI=y1; col. 10, lines 53-67]**.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to apply the virtual link concept as taught by Katsube and implement to Imanaka's redundant Ethernet communication network system.

The motivation for combining the reference teachings would be to enable a subscriber equipment in a local redundant Ethernet communication network system to communicate a remote subscriber equipment residing in another redundant Ethernet communication network system using the virtual link concept so that each virtual link will not be disturbed by other links which share the same physical link along its route in the network.

Regarding claim 9, Imanaka teaches a process that is used for implementation of a redundant switched full-duplex Ethernet type communication network in avionics **[It is obvious that a redundant switched full-duplex Ethernet-type communication can**

be deployed in avionics since the technology is obviously not environment dependent].

Regarding claim 10, Imanaka, in view of Katsube, teaches the steps used in the subscriber equipment and applied by a virtual link onto the network are such that:

in transmission, for each frame received from a communication stack **[Figs. 1-3]**:

adding a numbering field so that a counter numbers the frame corresponding to each virtual link **[Fig. 2; Adding Data Identifier 7with a unique, consecutive sequence number for each virtual link; col. 3, lines 15-29]**, and

sending the frame onto the elementary networks **[Figs. 1 & 3; Data are concurrently transmitted from Node 10 to both System-A and System-B; col. 3, lines 30-45]**;

in reception, for each frame assigned to a virtual link **[Figs. 1-2 & 4-6]**:

storing the frame number **[Fig. 4, steps 111-112; col. 3, lines 45-67]**, and

accepting the frame if the frame number has not already been received **[Fig. 4; steps 113, 114 & 116; col. 4, lines 1-58]**, and if it has been received, destroying the frame **[Fig. 4; steps 113, 115; col. 4, lines 1-58]**.

Regarding claim 11, Imanaka, in view of Katsube, teaches the implementation of several services in each subscriber equipment includes:

a transmission service **[Figs. 1-3]**, the role of which is to enable an application to access virtual links in transmission, wherein this service multiplexes virtual links towards

a physical link through an Ethernet interface, and for each virtual link sends packets as a function of the passband allocated to the virtual link **[It would have been obvious in Imanaka & Katsube and to one skilled in the art to recognize that multiple virtual links are multiplexed toward a physical link for data transmission and the sum of the bandwidth assigned to each virtual link should not exceed the capacity of the underlying physical link]**, and

a reception service **[Figs. 1-2 & 4-6]** that decodes frames, checks the format of the frame and makes useful data available to applications **[Fig. 4; It would have been obvious the Reception Processing, step 111-116, decodes, checks and make useful data available before notifying the upper layer application]**.

Regarding claim 12, Imanaka, in view of Katsube, teaches implementing a service for protection of a passband in the switch, which for each incoming virtual link is capable of checking time characteristics of packets **[Fig. 4; steps 113, 114 & 116; checking the time spacing between packets received from System-A and System B; col. 4, lines 1-58]**, the packets being destroyed if allowable time characteristics are exceeded **[Fig. 4; steps 113, 115; Discard reception data since it is arrived late, i.e. the identical data has been received; col. 4, lines 1-58]**.

Regarding claim 13, Imanaka, in view of Katsube, teaches the application treats each virtual link as a queue **[Fig. 1; It would have been obvious to one skilled in the art to recognize that the application allocates storage areas/queues, residing in**

System-A Reception Queues 14 & 24, System-B Reception Queues 15 & 25 or Buffer Sections 13 and 23, for each virtual link associated with the application].

Regarding claim 14, Imanaka, in view of Katsube, teaches the same frame number can be used for two different virtual links **[It would have been obvious to one skilled in the art to recognize that each virtual link is identified with a unique identifier such as DVLI as disclosed in Katsube. Thus the same frame number can be used for two different virtual links, i.e. the frame number is meaningful to its associated virtual link only, without introducing any confusion to an upper layer application]**.

Response to Arguments

3. Applicant's arguments with respect to claims 1, 2 and 6-14 have been considered but they are moot in view of the new ground(s) of rejection.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert T. Chou whose telephone number is 571-272-6045. The examiner can normally be reached on 8:30 - 17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham, can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Albert T. Chou
September 18, 2007 AC

CHI PHAM
SUPERVISORY PATENT EXAMINER
9/14/07